REMARKS

Claims 1-20 are now pending in the present application. Claims 1, 4, 7, 10, and 13-16 have been amended and Claims 17-20 have been added. Applicant has submitted proposed corrections in red ink to the drawings, labeled Figure 4 to correlate with the disclosure in the specification. These changes will be incorporated into a formal set of drawings upon approval of the proposed changes by the Examiner.

Applicant has carefully studied the outstanding Office Action. The present Response is intended to be fully responsive to all points of rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of this application are respectfully requested. No new matter has been added by any of the amendments to the specification. Applicant respectfully requests reconsideration and withdrawal of the Examiner's rejections in view of the foregoing amendments and following remarks.

CLAIM REJECTIONS – 35 U.S.C. § 112

Claims 1-16

The Examiner rejected claims 1-16 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Examiner stated:

> The claim(s) contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. As it is recited in claims 4 and 10, it is unclear how the frequency "may be adjusted". It is noted that selection of different frequencies is indicated on p. 9 of the specification but there is no indication of providing means for adjusting the frequency. Further, it is unclear where a "computer program product" is disclosed including a computer readable medium along with "instructions" as claimed in claims 13-16.

This rejection is respectfully traversed. With respect to means for adjusting the frequency, Applicant would direct Examiner's attention to page 13, line 7, wherein the specification discloses a "means for selecting sender frequencies used for the ultrasonic analysis." Moreover, a product brochure for the referenced EPOCH 4 ultrasonic unit is provided for Examiner's perusal. Applicants contend that one of ordinary skill in the art at the time of the invention would recognize a means for adjusting a frequency inherently shown in the Figures and disclosed in the specification.

With respect to Examiner's comments regarding the "computer program product", Claims 13-16 have been amended to address Examiner's concerns and, where necessary, clarify the enablement of the subject invention. Therefore, Applicants respectfully request reconsideration and withdrawal of the Examiner's rejections based upon 35 U.S.C. § 112, first paragraph

Claims 4, 10, and 13-16

The Examiner has rejected claims 4, 10, and 13-16 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which Applicant regards as the invention. In particular, the Examiner stated:

> As to claims 4 and 10, it is unclear what is used to adjust the frequency as indicated. Further, in claims 13-16, support for these claims is not found in the disclosure.

This rejection is respectfully traversed. With respect to claims 4 and 10, Applicant would direct Examiner's attention to page 13, line 7, wherein the specification discloses a "means for selecting sender frequencies used for the ultrasonic analysis" comprised of pull-down menu 601 on the GUI data panel 600. Moreover, a product brochure for the referenced EPOCH 4 ultrasonic unit is provided for Examiner's perusal. Applicants contend that one of ordinary skill in the art at the time of the invention would recognize a means for adjusting a frequency inherently shown in the Figures and disclosed in the specification. Therefore, Applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection based upon 35 U.S.C. § 112, second paragraph.

With regard to Examiner's general rejection claims 13-16, Applicants respectfully traverse this rejection and note that whenever any claim for a patent is rejected, or any objection is made, the Examiner must give notification of the reasons for rejection and/or objection as may be useful in judging the propriety of continuing the prosecution. MPEP §707. "The Examiner cannot sit mum, leaving the applicant to shoot arrows into the dark hoping to somehow hit a secret objection harbored by the Examiner." *In re Oetiker*, 977 F.2d 1443, U.S.P.Q.2d 1443, 1447 (Fed. Cir. 1992) (Plager, J., concurring). While claims 13-16 have been amended to address Examiner's previous noted concerns, Applicants request that Examiner point out fully all of the defects in claims 13-16 so that Applicants may timely and fully respond.

CLAIM REJECTIONS – 35 U.S.C. §103(a)

Claims 1, 3-7, 9-13, 15 and 16

The Examiner rejected claims 1, 3-7, 9-13, 15 and 16 under 35 U.S.C. §103(a), as being unpatentable over Hideaki (Japanese Patent No. JP-279856). The Examiner has stated that:

> Hideaki ['856] discloses a method/apparatus for measuring sound velocity changes in cylindrical or columnar material including a frame 4, probes 2 and 3, processing system G for using the time differences as a measure of the state of the curved surface 11, see Abstract translation and figures. Further, Hideaki ['856] lacks a teaching for testing polymeric materials or comparison to an expected time. However, Hideaki ['856] does teach testing any cylindrical or columnare material using this method/apparatus, therefore it is believed that it would have been obvious to one of ordinary skill in the art at the time of the invention to have applied the Hideaki ['856] teaching for testing type of cylindrical or columnar material including "polymeric" materials since the principles of operation have been applied to any type of material of the shape given. As to comparison to an expected time, it would have been obvious to one or ordinary skill in the art at the time of the invention to have compared to previously established result in the Hideaki ['856] device to determine the hydrogen corrosion or stress affecting the sound velocity. **As to claims 3 and 9,** note that steel beam 4 appears to have a scale for allowing adjustment of the positioning of the probes. **As to claims 4 and 10,** as best understood, note that various probes are available with different frequencies of operation allowing for adjustment of the frequencies. **As to claims 5 and 11,** usage of silicone cores is considered a matter of design choice that would have been obvious to one of ordinary skill in the art at the time of the invention to have included as the coupling material and such a selection would be based on the type of material being tested. **As to claims 13-16,** as best understood, it appears that a computer program product is not disclosed, per se. However, it appears that inclusion of a computer control is old and very well-known such that inclusion of such would have been obvious to one of ordinary skill in the art at the time of the invention in order to facilitate automation of the process.

This rejection is respectfully traversed. Claims 1, 4, 7, 10, 15 and 16 have been amended in view of Examiner's comments. Claims 1, 3-7, 9-13, 15 and 16, as amended, are non-obviousness despite the teachings of Hideaki 'JP856. The prior art cited by Examiner does not teach or disclose every element of Applicant's invention.

As best understood, unlike the device of the present invention, Hideaki 'JP856 does not teach or claim a device for inspecting tanks. The Hideaki 'JP856 is specifically directed at solid columnar or cylindrical material, whereas the present device is directed at inspecting the walls of tanks.

It is well established that as a part Examiner's burden to establish a *prima facie* case of obviousness, Examiner is required to show that the referenced teachings "appear to have suggested the claim subject matter." *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143, 147 (C.C.P.A. 1976). As stated by the Federal Circuit, "Obviousness cannot be established by combining teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination." *In re Geiger*, 815 F.2d 683, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). Hideaki 'JP856 does not teach or disclose every element of Applicant's invention. Examiner has not established a *prima facie* case of obviousness, and the rejection of Claims 1, 3-7, 9-13, 15 and 16 should be withdrawn.

Claims 1, 3-7, 9-13, 15 and 16

The Examiner rejected claims 1, 3-7, 9-13, 15 and 16 under 35 U.S.C. §103(a), as being unpatentable over Maucher (U.S. Patent No. 4,438,527). The Examiner has stated that:

> **As to claims 1, 3-7, 9-13, 15 and 16,** Maucher ['527] discloses an ultrasonic measuring instrument and associated method including a frame 14, probes 34 and data processing unit 46 which measures the velocities through the pipes and comparing them to known velocities for gray and ductile pipes, see col. 1, lines 45 et seq. and fig. 1. It is noted that the pipes are not polymeric materials. However, it is indicated that the invention relates to identification of materials of similar structure, see col. 1, lines 5-21. Therefore, application of the Maucher ['527] device to the detection of polymeric material would have been obvious to one of ordinary skill in the art at the time of the invention since polymeric materials of containment are known to be used in the industry given Maucher's ['527] teaching of identification of materials in industry and since testing of polymeric materials appears to be an intended usage clause. As to claims 3 and 9, rack 14 allows for adjustment using distance sensor 22. **As to claims 4 and 10,** as best understood, usage of transducers with different operational frequencies is considered a matter of design choice based on the material being tested. **As to claims 5 and 11,** Maucher ['527] discloses a Lucite acrylic resin shoe rather than silicone. However, substitution with silicone is considered an obvious matter of design choice based on the acoustic impedances of the tested material. **As to claims 13 and 15-16,** usage of a computer is not disclosed. However, usage of a computer program is considered to have been obvious to one of ordinary skill in the art at the time of the invention in order to automate the testing procedure.

This rejection is respectfully traversed. Claims 1, 4, 7, 10, 15 and 16 have been amended in view of Examiner's comments. Claims 1, 3-7, 9-13, 15 and 16, as amended, are non-obviousness despite the teachings of Maucher '527. The Maucher '527 reference cited by Examiner does not teach or disclose every element of Applicant's invention.

Unlike the device of the present invention, Maucher '527 does not teach or claim a device which includes "a data processing system that measures the travel time of said critically refracted ultrasonic waves from the transmitting probe to the receiving probe and compares said measured travel time to an expected travel time, wherein the speed of said ultrasonic waves is affected by variations in material properties along the penetration path of the ultrasonic waves." The Maucher '527 patent discloses a device which merely displays the velocity of the ultrasonic transmission and compares it to that of known velocities between either gray or ductile pipes. For example, at column 2, line 28 *et seq.*, the Maucher '527 patent discloses the following:

> The component 45 generates a signal related to the velocity of transmission and displays it on a voltmeter 48 and/or a digital read-out device 50.
>
> In the operable embodiment, the component 45 is an analog divider in the form of a sealed semiconductor (Analog Devices, Model 434) and the detection unit 46 is a commercially available, portable, test instrument (Krautkramer-Branson, Model ULS-38).
>
> In operation, the shoes 30 are positioned in acoustic contact with a pipe 12, with the probes 34 across a chord. High frequency pulses are transmitted from probe 34t to probe 34r and a time-related signal is generated in detection unit 46. That signal t and signal d from the potentiometer 22 are processed in the divider 45 and a velocity-related signal V is displayed on the voltmeter 48 and/or the digital readout device 50. Either of these displays tells an operator which species of pipe is being inspected, the velocities through gray and ductile pipes being different and having been determined in advance.

Thus, whereas the present invention is directed at making a qualitative assessment of one material, the Maucher '527 device is merely distinguishing between two distinct types of material.

With regard to claims 5 and 11, while the Maucher '527 patent does disclose a Lucite acrylic resin shoe, Examiner miscorrelates their purpose with that of the silicone wave travel path of the present invention. A more proper correlation is with the Lexan probe wearface referenced at page 7, line 27 of the specification. Moreover, as disclosed in the specification at page 7, line22 *et seq.*, the use of silicone wave travel paths is a crucial aspect of the present invention in that the use of the low speed silicone enables excitation of the L_{CR} wave in the polymer.

CONCLUSION

Applicant has adopted the Examiner's suggestions and believes the claims are in condition for allowance. It is respectfully urged that the subject application is patentable over references cited by Examiner and is now in condition for allowance. Applicant requests consideration of the application and allowance of the claims. If there are any outstanding issues that the Examiner feels may be resolved by way of a telephone conference, the Examiner is cordially invited to contact David W. Carstens at 972.367.2001.

The Commissioner is hereby authorized to charge any additional payments that may be due for additional claims to Deposit Account 50-0392.

Respectfully submitted,

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